

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended)      An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

~~input the behavior of the output drivers of the power chip,~~

input to the power chip the format of the diagnostic data to be output,

input to the power chip when it has to output what diagnostic data,

input to the power chip which load is to be controlled, taking into consideration which load control data section, and

input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are.

2. (Previously Presented)      The arrangement as claimed in claim 1, wherein the program-

controlled unit sets the behavior of the diagnostic data output driver of the power chip which outputs the diagnostic data by transmitting corresponding control data to the power chip.

3. (Original) The arrangement as claimed in claim 2, wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, whether the diagnostic data output driver of the power chip operates in accordance with the push/pull method or in accordance with the open-drain method.

4. (Original) The arrangement as claimed in claim 2, wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, how steep the edges of the signals output by the diagnostic data output driver should be.

5. (Original) The arrangement as claimed in claim 1, wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, the behavior of the load control data output drivers of the power chip which output the currents and voltages to be output to the loads connected to the power chip.

6. (Original) The arrangement as claimed in claim 5, wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, the timing of processes running in the load control data output drivers.

7. (Previously Presented) An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

input the behavior of the output drivers of the power chip,

configure protective mechanisms present in the power chip,

input to the power chip the format of the diagnostic data to be output,

input to the power chip when it has to output what diagnostic data,

input to the power chip which load is to be controlled, taking into consideration which load control data section, and

input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are, and

wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, the behavior of the load control data output drivers of the power chip which output the currents and voltages to be output to the loads connected to the power chip, the timing of processes running in the load control data output drivers, and how great the time interval is in which the drive of transistors contained in the load control data output drivers has to take place, which transistors must be brought simultaneously from the conducting into the non-conducting state or conversely, but cannot switch at the same speed and can cause a short circuit if the drive is changed simultaneously.

8. (Previously Presented) An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

input the behavior of the output drivers of the power chip,

configure protective mechanisms present in the power chip,

input to the power chip the format of the diagnostic data to be output,

input to the power chip when it has to output what diagnostic data,

input to the power chip which load is to be controlled, taking into consideration which load control data section, and

input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are, and

wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, the behavior of the load control data output drivers of the power chip

which output the currents and voltages to be output to the loads connected to the power chip, and how steep the edges of the signals output by the load control data output drivers have to be.

9. (Original) The arrangement as claimed in claim 1, wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, what states or events have to be considered as abnormal states or events.

10. (Original) The arrangement as claimed in claim 9, wherein the states or events to be considered as abnormal are input taking into consideration the behavior of the loads connected to the power chip with time.

11. (Previously Presented) An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

input the behavior of the output drivers of the power chip,

configure protective mechanisms present in the power chip,

input to the power chip the format of the diagnostic data to be output,

input to the power chip when it has to output what diagnostic data,

input to the power chip which load is to be controlled, taking into consideration which load control data section, and

input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are, and

wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, how it has to respond to the detection of an abnormal state or event.

12. (Previously Presented) An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

input the behavior of the output drivers of the power chip,

configure protective mechanisms present in the power chip,  
  
input to the power chip the format of the diagnostic data to be output,  
  
input to the power chip when it has to output what diagnostic data,  
  
input to the power chip which load is to be controlled, taking into consideration which load control data section, and  
  
input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are, and  
  
wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, whether the diagnostic data are to be output together with other information and what this other information consists of.

13. (Original) The arrangement as claimed in claim 1, wherein the power chip only outputs diagnostic data following a corresponding request by the program-controlled unit.

14. (Previously Presented) An arrangement including a program-controlled unit and a power chip connected to it, wherein

the power chip being additionally connected to electric loads and driving these electric loads in accordance with timing input to it by means of load control data,

the program-controlled unit configured to transmit to the power chip the abovementioned load control data and control data controlling the power chip, and

the power chip configured to transmit to the program-controlled unit diagnostic data by means of which states prevailing in the power chip or events occurring are represented, and

wherein the program-controlled unit, by transmitting corresponding control data to the power chip, can do at least one of the following:

input the behavior of the output drivers of the power chip,

configure protective mechanisms present in the power chip,

input to the power chip the format of the diagnostic data to be output,

input to the power chip when it has to output what diagnostic data,

input to the power chip which load is to be controlled, taking into consideration which load control data section, and

input to the power chip whether the load control data contain redundant data suitable for detecting transmission errors, and what these redundant data are, and

wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, what diagnostic data the power chip has to output.

15. (Currently Amended) A system comprising:

a program-controlled unit including means for generating load control data and operation control data, and means for transmitting the load control data and operation control data onto a bus; and

a power chip, connected to the bus and to one or more electrical loads, for controlling said one or more electrical loads in response to the load control data received from the program-controlled unit, and for transmitting to the program-controlled unit over the bus diagnostic data identifying operating states associated with the power chip,



wherein the power chip comprises at least one of:

~~means, responsive to first operation control data received from the program-controlled unit, for configuring signal characteristics associated with output drivers of the power chip;~~

means, responsive to second operation control data received from the program-controlled unit, for configuring an output format of the diagnostic data transmitted onto the bus;

means, responsive to third operation control data received from the program-controlled unit, for controlling the transmission of selected portions of the diagnostic data at selected times onto the bus;

means, responsive to fourth operation control data received from the program-controlled unit, for configuring the power chip to control a selected load in response to corresponding selected bits of the transmitted load control data; and

means, responsive to fifth operation control data received from the program-controlled unit, for configuring the power chip to identify redundant data in subsequently received load control data transmissions.

16. (Currently Amended) A system comprising:

a program-controlled unit including a generator configured to generate load control data and operation control data, and a transmitter configured to transmit the load control data and operation control data onto a bus; and

a power chip, connected to the bus and to one or more electrical loads, configured to control said one or more electrical loads in response to the load control data received from the program-

controlled unit, and configured to transmit to the program-controlled unit over the bus diagnostic data identifying operating states associated with the power chip,

wherein the power chip comprises at least one of:

~~—— a first unit, responsive to first operation control data received from the program-controlled unit, designed to configure signal characteristics associated with output drivers of the power chip;~~

a second unit, responsive to third operation control data received from the program-controlled unit, designed to configure an output format of the diagnostic data transmitted onto the bus;

a third unit, responsive to fourth operation control data received from the program-controlled unit, designed to control the transmission of selected portions of the diagnostic data at selected times onto the bus;

a fourth unit, responsive to fifth operation control data received from the program-controlled unit, designed to configure the power chip to control a selected load in response to corresponding selected bits of the transmitted load control data; and

a fifth unit, responsive to sixth operation control data received from the program-controlled unit, designed to configure the power chip to identify redundant data in subsequently received load control data transmissions, and

wherein the program-controlled unit inputs to the power chip, by transmitting corresponding control data to the power chip, what diagnostic data the power chip has to output.

17. (Previously Presented) A program-controlled unit, comprising:

a microsecond bus controller configured to drive loads connected to a plurality of power chips;

a single transmission clock signal line configured to transmit a transmission clock signal;

a single control line which serially transmits, in time-division multiplex at the rate of the transmission clock signal, load control data and control data to the power chips; and

a chip select line for each one of the plurality of power chips, wherein each of the chip select lines is configured to select the respective power chip to which the single control line transmits the load control data and control data,

wherein load control data output within a single time window can be intended for more than one of the power chips.

18. (Previously Presented) A program-controlled unit, comprising:

a microsecond bus controlling means for driving loads connected to a plurality of power chips;

a single transmission clock signal line configured to transmit a transmission clock signal;

a single control line which serially transmits, in time-division multiplex at the rate of the transmission clock signal, load control data and control data to the power chips; and

a chip select line for each one of the plurality of power chips, wherein each of the chip select lines is configured to select the respective power chip to which the single control line transmits the load control data and control data,

wherein load control data output within a single time window can be intended for more than one of the power chips.